January 2004

Nebraska Summary 429: Case IH MX M120 Diesel

SUMMARY OF OECD TEST 2086–NEBRASKA SUMMARY 429
CASE IH MXM120 DIESEL
18 SPEED

POWER TAKE-OFF PERFORMANCE

Power HP *(kW)*	Crank shaft speed rpm	Gal/hr *(l/h)*	lb/hp.hr *(kg/kW.h)*	Hp.hr/gal *(kW.h/l)*	Mean Atmospheric Conditions
MAXIMUM POWER AND FUEL CONSUMPTION					
Rated Engine Speed—(PTO speed—1039 rpm)					
100.7 *(75.1)*	2202	6.77 *(25.63)*	0.472 *(0.287)*	14.87 *(2.93)*	
Standard Power Take-off Speed (1000 rpm)					
104.1 *(77.6)*	2120	6.66 *(25.20)*	0.449 *(0.273)*	15.63 *(3.08)*	
Maximum Power (2 hours)					
104.9 *(78.2)*	2005	6.42 *(24.32)*	0.430 *(0.262)*	16.33 *(3.22)*	
VARYING POWER AND FUEL CONSUMPTION					
100.7 *(75.1)*	2202	6.77 *(25.63)*	0.472 *(0.287)*	14.87 *(2.93)*	Air temperature
90.3 *(67.3)*	2325	6.52 *(24.68)*	0.506 *(0.308)*	13.86 *(2.73)*	73°F *(23°C)*
68.3 *(50.9)*	2344	5.40 *(20.43)*	0.555 *(0.338)*	12.64 *(2.49)*	Relative humidity
45.9 *(34.2)*	2363	4.40 *(16.67)*	0.674 *(0.410)*	10.41 *(2.05)*	42%
23.5 *(17.5)*	2389	3.40 *(12.88)*	1.018 *(0.620)*	6.89 *(1.36)*	Barometer
-- --	2404	2.41 *(9.13)*	-- --	-- --	29.7" Hg *(100.5 kPa)*

Maximum Torque - 372.2 lb.-ft. *(504.7 Nm)* at 1154 rpm
Maximum Torque Rise - 55.0%
Torque rise at 1800 engine rpm - 25%

DRAWBAR PERFORMANCE
(Unballasted - Front Drive Engaged)
FUEL CONSUMPTION CHARACTERISTICS

Power Hp *(kW)*	Drawbar pull lbs *(kN)*	Speed mph *(km/h)*	Crank-shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr *(kg/kW.h)*	Hp.hr/gal *(kW.h/l)*	Temp.°F *(°C)* cool-ing med	Air dry bulb	Barom. inch Hg *(kPa)*
Maximum Power—9th(3B) Gear									
83.0 *(61.9)*	6135 *(27.3)*	5.07 *(8.16)*	2205	3.3	0.571 *(0.347)*	12.29 *(2.42)*	196 *(91)*	43 *(6)*	30.4 *(103.0)*
75% of Pull at Maximum Power—9th(3B) Gear									
66.1 *(49.3)*	4610 *(20.5)*	5.39 *(8.67)*	2323	2.5	0.641 *(0.390)*	10.96 *(2.16)*	196 *(91)*	43 *(6)*	30.4 *(103.0)*
50% of Pull at Maximum Power—9th(3B) Gear									
44.9 *(33.5)*	3055 *(13.6)*	5.49 *(8.84)*	2350	1.8	0.794 *(0.483)*	8.84 *(1.74)*	196 *(91)*	41 *(5)*	30.4 *(103.0)*
75% of Pull at Reduced Engine Speed—10th(4B) Gear									
66.1 *(49.3)*	4610 *(20.5)*	5.38 *(8.66)*	1934	2.7	0.545 *(0.332)*	12.88 *(2.54)*	183 *(84)*	45 *(7)*	30.4 *(103.0)*
50% of Pull at Reduced Engine Speed—10th(4B) Gear									
44.7 *(33.3)*	3055 *(13.6)*	5.47 *(8.81)*	1950	2.0	0.675 *(0.410)*	10.41 *(2.05)*	183 *(84)*	45 *(7)*	30.4 *(103.0)*

Location of Test: Silsoe Research Institute, Wrest Park, Silsoe, MK45 4HS, United Kingdom

Dates of Test: December 2002 to March 2003.

Manufacturer: CNH U.K. Ltd., Basildon, Essex, SS14 3AD, England

FUEL and OIL: Fuel No. 2 Diesel **Specific gravity converted to 60°/60°F *(15°/15°C)*** 0.843 **Fuel weight** 7.02 lbs/gal *(0.8413 kg/l)* **Oil SAE** 10W30 **API service classification** CG-4 **Transmission and hydraulic lubricant** Case IH Hytran Ultra fluid **Front axle lubricant** Case IH Hytran Ultra fluid

ENGINE: Make CNH Diesel **Type** six cylinder vertical with turbocharger and air to air intercooler **Serial No.** 958334 **Crankshaft** lengthwise **Rated engine speed** 2200 **Bore and stroke** 4.40" x 5.00" *(111.8 mm x 127.0 mm)* **Compression ratio** 17.0 to 1 **Displacement** 456 cu in *(7480 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements and aspirator **Oil filter** one full flow cartridge **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** one paper element **Muffler** underhood **Exhaust** vertical **Cooling medium temperature control** thermostat and variable speed fan

CHASSIS: Type front wheel assist **Serial No.** 170778B **Tread width** rear 60.2" *(1530 mm)* to 87.8" *(2230 mm)* front 61.4" *(1560 mm)* to 89.0" *(2260 mm)* **Wheelbase** 107.2" (*2723 mm)* **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (6) range operator controlled powershift **Nominal travel speeds mph *(km/h)*** first 1.53 *(2.46)* second 1.84 *(2.96)* third 2.21 *(3.56)* fourth 2.66 *(4.28)* fifth 3.19 *(5.14)* sixth 3.55 (*5.72)* seventh 3.85 *(6.19)* eighth 4.28 *(6.88)* ninth 5.13 *(8.26)* tenth 6.17 *(9.93)* eleventh 7.43 *(11.95)* twelfth 8.93 *(14.37)* thirteenth 10.08 (*16.22)* fourteenth 12.12 *(19.50)* fifteenth 14.56 *(23.43)* sixteenth 17.50 *(28.17)* seventeenth 21.06 *(33.89)* eighteenth 25.32 *(40.75)* reverse 2.98 *(4.80)*, 3.59 *(5.78)*, 4.31 *(6.94)*, 5.18 *(8.34)*, 6.24 *(10.04)*, 7.50 *(12.07)* **Clutch** multiple wet disc electro-hydraulically operated by foot pedal **Brakes** wet disc hydraulically operated by two foot pedals that can be locked together **Steering** hydrostatic **Power take-off** 540 rpm at 1969 engine rpm or 1000 rpm at 2120 engine rpm **Unladen tractor mass** 11830 lb *(5366 kg)*

DRAWBAR PERFORMANCE

(Unballasted - Front Drive Engaged)
MAXIMUM POWER IN SELECTED GEARS

Power Hp *(kW)*	Drawbar pull lbs *(kN)*	Speed mph *(km/h)*	Crank-shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr *(kg/kW.h)*	Hp.hr/gal *(kW.h/l)*	Temp.°F*(°C)* cool-ing med	Air dry bulb	Barom. inch Hg *(kPa)*
					1st(1A) Gear				
46.9	12320	1.43	2348	14.0	0.780	9.00	189	45	30.4
(35.0)	*(54.8)*	*(2.30)*			*(0.474)*	*(1.77)*	*(87)*	*(7)*	*(103.0)*
					2nd(2A) Gear				
55.4	12025	1.73	2333	13.0	0.710	9.89	187	46	30.4
(41.3)	*(53.5)*	*(2.78)*			*(0.432)*	*(1.95)*	*(86)*	*(8)*	*(103.0)*
					3rd(3A) Gear				
64.1	11490	2.09	2320	11.7	0.703	9.98	187	46	30.4
(47.8)	*(51.1)*	*(3.37)*			*(0.428)*	*(1.97)*	*(86)*	*(8)*	*(103.0)*
					4th(4A) Gear				
75.2	11330	2.49	2264	10.5	0.635	11.07	187	48	30.4
(56.1)	*(50.4)*	*(4.01)*			*(0.386)*	*(2.18)*	*(86)*	*(9)*	*(103.0)*
					5th(5A) Gear				
83.4	10770	2.90	2137	8.3	0.569	12.33	185	48	30.4
(62.2)	*(47.9)*	*(4.67)*			*(0.346)*	*(2.43)*	*(85)*	*(8)*	*(103.0)*
					6th(1B) Gear				
87.0	10655	3.06	2003	6.9	0.520	13.49	187	39	30.4
(64.9)	*(47.4)*	*(4.93)*			*(0.317)*	*(2.66)*	*(86)*	*(4)*	*(103.1)*
					7th(6A) Gear				
85.6	9555	3.36	2002	5.7	0.532	13.20	187	41	30.4
(63.8)	*(42.5)*	*(5.41)*			*(0.324)*	*(2.60)*	*(86)*	*(5)*	*(103.1)*
					8th(2B) Gear				
87.8	8745	3.77	2004	4.9	0.514	13.65	196	39	30.5
(65.5)	*(38.9)*	*(6.07)*			*(0.313)*	*(2.69)*	*(91)*	*(4)*	*(103.2)*
					9th(3B) Gear				
88.5	7285	4.55	1995	3.9	0.506	13.86	196	43	30.4
(66.0)	*(32.4)*	*(7.33)*			*(0.308)*	*(2.73)*	*(91)*	*(6)*	*(103.1)*
					10th(4B) Gear				
87.0	5890	5.54	2002	3.3	0.522	13.45	196	39	30.5
(64.9)	*(26.2)*	*(8.91)*			*(0.317)*	*(2.65)*	*(91)*	*(4)*	*(103.2)*
					11th(5B) Gear				
86.4	4835	6.70	2002	2.7	0.528	13.30	196	39	30.5
(64.4)	*(21.5)*	*(10.78)*			*(0.321)*	*(2.62)*	*(91)*	*(4)*	*(103.2)*
					12th(6B) Gear				
83.7	3890	8.08	1998	2.3	0.546	12.85	196	37	30.5
(62.4)	*(17.3)*	*(13.00)*			*(0.332)*	*(2.53)*	*(91)*	*(3)*	*(103.2)*
					13th(1C) Gear				
88.2	3620	9.17	2005	2.2	0.512	13.72	194	37	30.4
(65.8)	*(16.1)*	*(14.76)*			*(0.311)*	*(2.70)*	*(90)*	*(3)*	*(103.1)*

TRACTOR SOUND LEVEL WITH CAB	Front Wheel Drive Disengaged dB(A)	Engaged dB(A)
At no load in 8th (2B) gear	75.0	76.0
Bystander	--	--

TIRES AND WEIGHT — **Tested Without Ballast**

Rear tires - No.,size, ply & psi*(kPa)*	Two 18.4R38; **;14 *(95)*
Front tires - No.,size, ply & psi*(kPa)*	Two 14.9R28; **;14 *(95)*
Height of Drawbar	19.7 in *(500 mm)*
Static Weight with operator- Rear	7240 lb *(3285 kg)*
- Front	4755 lb *(2156 kg)*
- Total	11995 lb *(5441 kg)*

REPAIRS AND ADJUSTMENTS: No repairs or adjustments

REMARKS: All test results were determined from observed data obtained in accordance with official OECD test procedures. This tractor did not meet the manufacturer's claim of 72.0 dB(A) cab sound level. The standard capacity 3 point lift claim of 9755 lbs *(4425 kg)* was not tested for verification. The performance figures on this summary were taken from a test conducted under the OECD Code II test procedure.

We, the undersigned, certify that this is a true summary of data from OECD Report No. **2086** Nebraska Summary 429, September 17, 2004.

Leonard L. Bashford
Director

M.F. Kocher
V.I. Adamchuk
W.P. Campbell
Board of Tractor Test Engineers

DRAWBAR PERFORMANCE

(Unballasted - Front Drive Disengaged)

FUEL CONSUMPTION CHARACTERISTICS

Power Hp *(kW)*	Drawbar pull lbs *(kN)*	Speed mph *(km/h)*	Crank-shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr *(kg/kW.h)*	Hp.hr/gal *(kW.h/l)*	Temp.°F *(°C)* cool-ing med	Air dry bulb	Barom. inch Hg *(kPa)*
Maximum Power—8th (2B) Gear									
83.7	7825	4.01	2203	6.5	0.576	12.19	185	41	30.2
(62.4)	*(34.8)*	*(6.46)*			*(0.350)*	*(2.40)*	*(91)*	*(5)*	*(102.2)*
75% of Pull at Maximum Power—8th (2B) Gear									
68.1	5870	4.35	2321	3.7	0.621	11.31	183	41	30.2
(50.8)	*(26.1)*	*(7.00)*			*(0.378)*	*(2.23)*	*(90)*	*(5)*	*(102.2)*
50% of Pull at Maximum Power—8th (2B) Gear									
46.8	3910	4.48	2353	2.3	0.728	9.64	183	41	30.2
(34.9)	*(17.4)*	*(7.21)*			*(0.443)*	*(1.90)*	*(87)*	*(5)*	*(102.1)*
75% of Pull at Reduced Engine Speed—9th (3B) Gear									
68.0	5870	4.34	1937	4.2	0.551	12.74	183	45	30.1
(50.7)	*(26.1)*	*(6.99)*			*(0.335)*	*(2.51)*	*(85)*	*(7)*	*(101.9)*
50% of Pull at Reduced Engine Speed—9th (3B) Gear									
46.5	3910	4.47	1962	2.8	0.626	11.22	181	45	30.1
(34.7)	*(17.4)*	*(7.19)*			*(0.381)*	*(2.21)*	*(86)*	*(7)*	*(101.9)*

MAXIMUM POWER IN SELECTED GEARS

2nd(2A) Gear									
40.9	9060	1.70	2352	14.0	0.820	8.56	196	46	30.1
(30.5)	*(40.3)*	*(2.73)*			*(0.499)*	*(1.69)*	*(91)*	*(8)*	*(101.9)*
3rd(3A) Gear									
48.5	8925	2.04	2340	13.5	0.780	9.00	189	45	30.1
(36.2)	*(39.7)*	*(3.28)*			*(0.474)*	*(1.77)*	*(87)*	*(7)*	*(101.9)*
4th(4A) Gear									
59.1	8950	2.47	2323	12.1	0.747	9.40	189	45	30.1
(44.1)	*(39.8)*	*(3.98)*			*(0.454)*	*(1.85)*	*(87)*	*(7)*	*(101.9)*
5th(5A) Gear									
69.2	8745	2.96	2301	11.5	0.675	10.41	187	45	30.1
(51.6)	*(38.9)*	*(4.77)*			*(0.410)*	*(2.05)*	*(86)*	*(7)*	*(101.9)*
6th(1B) Gear									
76.4	8720	3.29	2267	10.4	0.640	10.96	185	45	30.1
(57.0)	*(38.8)*	*(5.29)*			*(0.389)*	*(2.16)*	*(85)*	*(7)*	*(101.9)*
7th(6A) Gear									
78.2	8610	3.41	2156	9.9	0.612	11.47	187	45	30.1
(58.3)	*(38.3)*	*(5.48)*			*(0.372)*	*(2.26)*	*(86)*	*(7)*	*(101.9)*
8th(2B) Gear									
85.3	8500	3.77	2086	7.3	0.547	12.84	187	43	30.2
(63.6)	*(37.8)*	*(6.06)*			*(0.333)*	*(2.53)*	*(86)*	*(6)*	*(102.1)*
9th(3B) Gear									
86.9	7375	4.42	1998	5.3	0.520	13.50	196	41	30.2
(64.8)	*(32.8)*	*(7.12)*			*(0.316)*	*(2.66)*	*(91)*	*(5)*	*(102.2)*
10th(4B) Gear									
87.2	6045	5.41	1998	3.7	0.526	13.35	196	41	30.2
(65.0)	*(26.9)*	*(8.71)*			*(0.320)*	*(2.63)*	*(91)*	*(5)*	*(102.2)*
11th(5B) Gear									
86.4	4900	6.60	2010	3.0	0.523	13.40	196	41	30.2
(64.4)	*(21.8)*	*(10.62)*			*(0.318)*	*(2.64)*	*(91)*	*(5)*	*(102.2)*
12th(6B) Gear									
83.0	3890	7.98	2008	2.3	0.540	12.99	185	41	30.2
(61.9)	*(17.3)*	*(12.85)*			*(0.329)*	*(2.56)*	*(85)*	*(5)*	*(102.1)*
13th(1C) Gear									
88.6	3665	9.06	2016	2.3	0.516	13.60	187	41	30.2
(66.1)	*(16.3)*	*(14.58)*			*(0.314)*	*(2.68)*	*(86)*	*(5)*	*(102.1)*

THREE POINT HITCH PERFORMANCE (OECD Static Test)

CATEGORY: II
Quick Attach: None
Maximum Force Exerted

Through Whole Range:	7485 lbs *(33.3 kN)* (with boost cylinder)
i) Opening pressure of relief valve:	NA
Sustained pressure of the open relief valve:	2960 psi *(204 bar)*
ii) Pump delivery rate at minimum pressure:	32.1 GPM *(121.5 l/min)*
iii) Pump delivery rate at maximum hydraulic power:	28.5 GPM *(107.9 l/min)*
Delivery pressure:	2460 psi *(170 bar)*
Power:	41.0 HP *(30.6 kW)*

THREE POINT HITCH PERFORMANCE

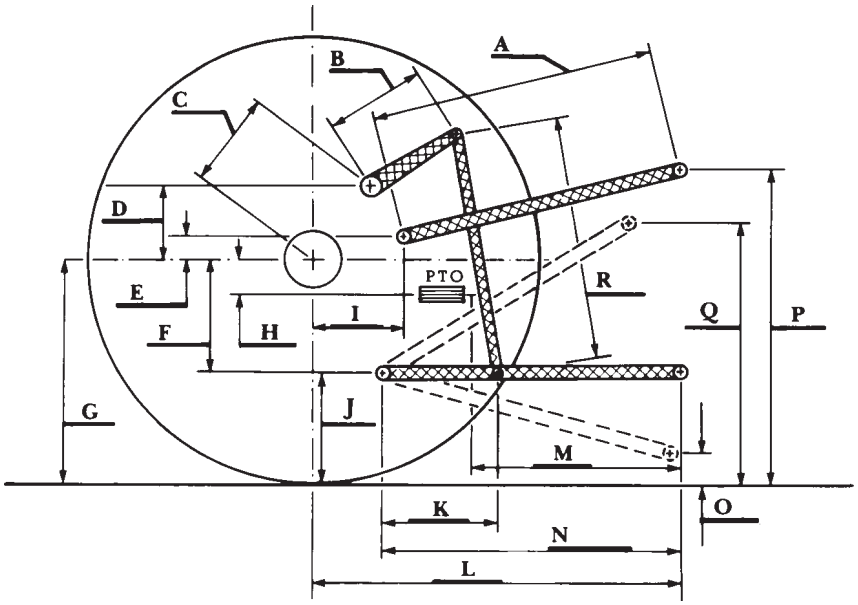
Observed Maximum Pressure psi. *(bar)*	2960 *(204)*
Location:	lift cylinder
Hydraulic oil temperature: °F *(°C)*	150 *(65)*
Location:	hydraulic sump
Category:	II
Quick attach:	none

SAE Static Test—System pressure 2610 psi *(180 Bar)* (with boost cylinder)

Hitch point distance to ground level in. *(mm)*	8.0 *(203)*	15.7 *(400)*	22.4 *(570)*	29.7 *(755)*	37.0 *(940)*
Lift force on frame lb	13490	14075	14095	13890	12295
" " " " " " " *(kN)*	*(60.0)*	*(62.6)*	*(62.7)*	*(61.8)*	*(54.7)*

HITCH DIMENSIONS AS TESTED—NO LOAD

	OECD test		SAE test	
	inch	*mm*	inch	*mm*
A	29.7	*754*	29.9	*760*
B	9.1	*230*	9.1	*230*
C	15.6	*395*	15.6	*395*
D	14.3	*363*	14.3	*363*
E	8.2	*208*	10.8	*275*
F	9.8	*250*	9.8	*250*
G	32.3	*820*	32.3	*820*
H	0.7	*17*	0.7	*17*
I	17.9	*455*	16.9	*430*
J	22.5	*570*	22.5	*570*
K	17.1	*435*	19.8	*504*
L	47.0	*1194*	47.0	*1194*
M	23.3	*592*	23.3	*592*
N	38.3	*974*	38.3	*974*
O	7.8	*198*	8.0	*203*
P	46.5	*1180*	41.5	*1053*
Q	36.2	*920*	33.3	*845*
R	29.3	*745*	31.0	*787*



Agricultural Research Division
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Darrell Nelson, Dean and Director